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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,387	06/13/2005	Koji Otsuka	05-429	5724
34704 7590 03/13/2007 BACHMAN & LAPOINTE, P.C. 900 CHAPEL STREET SUITE 1201 NEW HAVEN, CT 06510			EXAMINER CARTER, WILLIAM JOSEPH	
			ART UNIT	PAPER NUMBER
			2875	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/13/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/538,387

Applicant(s)

OTSUKA ET AL.

Examiner

William J. Carter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 6/13/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

Claim 8 is objected to because of the following informalities:

In claim 8, lines 2-3, "the lower light-reflectivity and the higher light permeability" lacks antecedent basis.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mezei et al. (6,910,783) in view of Song et al. (2003/0116769).

With respect to claims 1 and 2, Mezei teaches a semiconductor light-emitting device (Fig. 3) comprising an elongated light transmitter (1); and a semiconductor light-emitting element (6) mounted on opposite ends of the transmitter (Fig. 3) toward the transmitter for emitting light which is introduced into the transmitter from both end thereof to radiate light outside from an outer peripheral surface (4) of the transmitter (Fig. 3). Mezei does not explicitly teach each semiconductor light-emitting element mounted on a heat sink that comprises a reflector integrally formed with or secured on a main surface of the heat sink, the reflector having a flaring inner surface which gradually

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expands toward the transmitter; and the semiconductor light-emitting element is surrounded by the inner surface of the reflector. Song, also drawn to LEDs, teaches each semiconductor light-emitting element (155) mounted on a heat sink (170) that comprises a reflector integrally formed with the heat sink (Abstract), the reflector having a flaring (R and r) inner surface which gradually expands toward the direction the light is emitted (Figs. 3 and 4a); and the semiconductor light-emitting element is surrounded by the inner surface of the reflector (Fig. 3). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use the LEDs of Song in the semiconductor light-emitting device of Mezei, in order to improve heat dissipation in addition to easily controlling its luminance and angular distribution of its luminance (paragraph 13).

As for claim 3, Mezei further teaches a light reflective film (15; column 5, line 7) formed at least on a portion of out or inner peripheral surface (Figs. 16 and 18) of the transmitter (1).

As for claim 4, Mezei and Song teach all of the claimed elements, as discussed above, as well as Mezei teaches the transmitter (1) formed of a transparent glass or resin (column 3, line 66-column 4, line 3) into a solid cylindrical shape (Figs. 3 and 5) and Song teaches a plastic encapsulant (159) which envelops (Fig. 4a) the heat sink (170). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use the encapsulant of Song to form a groove to receive the transmitter of Mezei, in order to use the epoxy (paragraph 41) to form a strong adhesion (<http://wordnet.princeton.edu/perl/webwn?s=epoxy>).

As for claim 5, Mezei and Song teach all of the claimed elements, as discussed above, as well as Song teaches it is well known in the art to electrically connect an electrode (paragraph 7) on a semiconductor light-emitting element (10) and an outer lead (3a and 3b) through lead wires (3a and 3b). Mezei and Song teach all of the disclosed elements, which are assembled as claimed, thus the method is inherently taught.

Claims 6, 7, 10, and 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Mezei and Song as applied to claim 1 above, and further in view of Murakami Tadashi et al. (JP-9213114-A).

With respect to claims 6, 7, 10, and 11, Mezei and Song teach all of the claimed elements, as discussed above, as well as Mezei teaches a plurality of mirrors (3 and 15) provided in the light transmitter (1) for reflecting light introduced into the light transmitter from the light-emitting element out of the light transmitter through the irradiation surface (Figs. 16 and 18) and mirrors (3 and 15) formed on at least one inclined surface (3) of plural segments (Figs. 3 and 16-18) of the light transmitter (1), and the inclined surfaces of plural segments are in contact to each other (Fig. 17). Mezei and Song do not explicitly teach the mirrors being half-mirrors being across and inclined at a certain angle to a longitudinal central line of the light; wherein the half-mirror formed into a plate shape is sandwiched between a plurality of segments of the lighting unit; and half-mirrors that are formed by vapor deposition. Murakami Tadashi, also drawn to linear light sources, teaches half-mirrors (11) being across and inclined at a certain angle to a longitudinal central line of the light (Figs. 10 and 14); wherein the half-mirror formed into

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a plate shape is sandwiched between a plurality of segments of the lighting unit (Figs. 10 and 14); and half-mirrors that are formed by vapor deposition (paragraph 40). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use the half mirrors of Murakami Tadashi in the linear light source of Mezei, in order to increase the transmitted light at points further from the light source (Fig. 10).

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mezei, Song, and Murakami Tadashi as applied to claims 6 and 7 above, and further in view of Haga (5,583,632).

With respect to claims 8 and 9, Mezei, Song, and Murakami Tadashi teach all of the claimed elements, as discussed above, except for explicitly teaching the half-mirrors have a lower light-reflectivity and a higher light permeability, the closer the half-mirrors are disposed to the light-emitting element; wherein at least one total reflection mirror is provided inside the half-mirrors in the lighting unit for reflecting light permeated through the half-mirrors to the outside of the lighting unit of the light transmitter through the irradiation surface. Haga, drawn to lighting, teaches half-mirrors (121 and 122) being across and inclined at a certain angle to a longitudinal central line of the light (Fig. 5); wherein the half-mirrors have a lower light-reflectivity and a higher light permeability (column 12, lines 5-12; the first half mirror (121) lets all of the laser light pass and the second half mirror (122) reflects some of the laser light making it more reflective and less permeable than the first half mirror), the closer the half-mirrors are disposed to the light-emitting element (22a); wherein at least one total reflection mirror (124) is provided inside (mirror 124 is disposed horizontally inside of half-mirrors) half-mirrors (11, 121,

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and 122) in the lighting unit for reflecting light permeated through the half-mirrors to the outside of the lighting unit of the light transmitter through the irradiation surface (133); wherein the half-mirror formed into a plate shape (Fig. 5) is sandwiched between a plurality of segments of the lighting unit (Fig. 5). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use the mirrors of Haga in the linear light source of Mezei, in order to control the light levels to a predetermined value (column 4, lines 20-26).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Carter whose telephone number is (571)272-0959. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra L. O'Shea can be reached on (571)272-2378. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

wjc  
03/01/07

  
ALI ALAVI  
PRIMARY EXAMINER